

**38<sup>th</sup> Annual Conference of the Ramanujan Mathematical Society (RMS 2023)**  
**December 22-24, 2023**  
**IIT Guwahati**

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**DAY-1 (December 22, 2023)**

<b>22<sup>nd</sup> Dec</b>	8:00-8:55 Registration (Auditorium)	9:00-9:10 Inauguration (Auditorium)	9:10-10:05 Plenary 1 (Auditorium)	10:05-10:35 High Tea (Auditorium)	10:50-11:50 ST 1, 2 (Core-5)	11:55-12:55 ST 3, 4 (Core-5)	1:00-2:30 Lunch (Conference Center)	2:40-4:00 CT (Core-5)	4:00-4:20 Tea (Core-5)	4:20-5:00 CT (Core-5)	5:20-6:15 Public Lecture (Auditorium)	6:20-7:20 GBM (Auditorium)
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**DAY-2 (December 23, 2023)**

<b>23<sup>rd</sup> Dec</b>	9:00-9:55 Plenary 2 (Auditorium)	10:00-10:30 Tea (Auditorium)	10:45-11:45 ST 5, 6 (Core-5)	11:50-12:50 ST 7, 8 (Core-5)	1:00-2:30 Lunch (Conference Center)	2:40-3:40 ST 9, 10 (Core-5)	3:45-4:05 CT (Core-5)	4:05-4:25 Tea (Core-5)	4:25-5:45 CT (Core-5)	6:00-6:55 Plenary 3 (Auditorium)
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**DAY-3 (December 24, 2023)**

<b>24<sup>th</sup> Dec</b>	9:00-9:55 Plenary 4 (Auditorium)	10:00-10:30 Tea (Auditorium)	10:45-11:45 ST 11, 12 (Core-5)	11:50-12:50 ST 13, 14 (Core-5)	1:00-2:30 Lunch (Conference Center)	2:40-3:40 ST 15, 16 (Core-5)	3:45-4:05 CT (Core-5)	4:05-4:25 Tea (Core-5)	4:25-5:25 CT (Core-5)	5:40-6:35 Plenary 5 (Auditorium)	6:40-7:00 Valedictory (Auditorium)
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\*Auditorium: Dr. Bhupen Hazarika Auditorium    \*ST: Symposia Talks    \*CT: Contributory Talks

\*Average walking time from Auditorium to Core-5 is 10 minutes

## Plenary/Public Talks

Venue: Dr. Bhupen Hazarika Auditorium

(December 22-24, 2023)

Talk	Date	Time	Speaker	Title of the talk
Plenary 1 (Professor R. Balakrishnan's Endowment Lecture)  Chair: Anupam Saikia	22 Dec	9:10-10:05	M. S. Raghunathan (CBS Mumbai)	Two Alumni of Loyola College, Chennai
Public Lecture  Chair: Jugal Verma	22 Dec	5:20-6:15	K. Ramasubramanian (IIT Bombay)	The History and Historiography of the Discovery of Calculus in India
Plenary 2  Chair: Panchugopal Bikram	23 Dec	9:00-9:55	Kallol Paul (Jadavpur University)	Geomtery of the space of linear operators from the perspective of Birkhoff-James orthgonality
Plenary 3  Chair: Tony J. Puthenpurakal	23 Dec	6:00-6:55	Gurmeet Kaur Bakshi (Panjab University)	Units in integral group rings
Plenary 4  Chair: Anand Sawant	24 Dec	9:00-9:55	Indranil Biswas (TIFR Mumbai)	Nonabelian Hodge Theory
Plenary 5  Chair: Rajen Kumar Sinha	24 Dec	5:40-6:35	Manjunath Krishnapur (IISc Bangalore)	Nodal sets and nodal domains of random eigenfunctions of the Laplacian

## Numerical Analysis

(Venue: Academic Complex - Core 5)

Core-5 class rooms have Green Chalk Boards and Projectors

<b>DAY-1 (December 22, 2023): Symposia Talks</b>				
<b>Symposia</b>	<b>Venue</b>	<b>Time</b>	<b>Speaker</b>	<b>Title of the talk</b>
Numerical Analysis	5103	10:50-12:55	Thirupathi Gudi (IISc Bangalore)	Quasioptimal convergent adaptive fem for an indefinite elliptic PDE
			Ajit Patel (LNMIIT, Jaipur)	Primal hybrid method for gradient type non-linearity parabolic problems
			Sangita Yadav (BITS Pilani, Pilani)	Hybridizable discontinuous Galerkin method for linear hyperbolic integro-differential equations
			Deepjyoti Goswami (Tezpur University)	A three steps two-grid discontinuous Galerkin method for the Oldroyd model of order one

<b>DAY-2 (December 23, 2023): Symposia Talks</b>				
<b>Symposia</b>	<b>Venue</b>	<b>Time</b>	<b>Speaker</b>	<b>Title of the talk</b>
Numerical Analysis	5103	10:45-12:50	Arbaz Khan (IIT Roorkee)	Divergence conforming discontinuous Galerkin finite element approximation for doubly diffusive flows
			Asha K. Dond (IISER TVM)	Convergence of adaptive FEMs for distributed elliptic optimal control problems
			Bankim Chandra Mandal (IIT Bhubaneswar)	Domain decomposition methods for linearized and non-linear Cahn-Hilliard equation
			Indranil Chowdhury (IIT Kanpur)	Error bounds for numerical approximations of fractional HJB equations
		2:40-3:40	Jhuma Sen Gupta (BITS Pilani Hyderabad)	Weak Galerkin dual mixed finite element method for linear parabolic interface problems
			Jogen Dutta (North Guwahati College)	Weak Galerkin finite element methods for second-order wave equations with polygonal meshes

## Numerical Analysis

(Venue: Academic Complex - Core 5)

DAY-3 (December 24, 2023): Symposia Talks				
Symposia	Venue	Time	Speaker	Title of the talk
Numerical Analysis	5103	10:45-12:50	Bhupen Deka (IIT Guwahati)	A least-squares-based weak Galerkin finite element method for the time-harmonic Maxwells equations
			Satyajit Pramanik (IIT Guwahati)	An HOC approach on non-uniform grids for time-dependent advection-diffusion equations
			Kaushik Mukherjee (IIST TVM)	On fitted mesh method for singularly perturbed semilinear parabolic PDEs with non-homogeneous boundary data
			G M M Reddy (BITS Pilani Hyderabad)	Crank-Nicolson a posteriori error estimates for parabolic partial differential equations with small random input data
		2:40-3:10	Sudarshan Kumar K. (IISER TVM)	Lax-Wendroff flux reconstruction method for hyperbolic conservation laws

\*Each Symposia talk is of 30 minutes duration including discussions

## Numerical Analysis

(Venue: Academic Complex - Core 5)

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DAY-1 (December 22, 2023): Contributory Talks				
Subject	Venue	Time	Speaker	Title of the talk
Numerical Analysis Chair: Ajit Patel	5103	2:40-4:00	Sudhakar Chaudhary (IITRAM Ahmedabad)	Symmetric fractional order reduction method with L1 scheme on graded mesh for time fractional nonlocal diffusion-wave equation of Kirchhoff type
			Nilay Mondal (The ICFAI University Tripura)	Development of a model for drug delivery into the diseased tissues by reversible electroporation
			Chandralekha Mahanta (NIT Arunachal Pradesh)	Synergistic Effects of Darcy and Viscous Dissipation in Nanofluid Flow over a Vertically Permeable Plate with Magnetic Field Induction
			Krishna Yamanappa Poojara (IISER Bhopal)	An Efficient High Order Quadrature for Weakly Singular Operators and its Applications in Wave Scattering Problems
Numerical Analysis Chair: Deepjyoti Goswami	5103	4:20-5:00	Sunita Choudhary (IIT Ropar)	Least square method for wave interaction with a tunnel and a submerged porous plate over a trench-type bottom
			Archana Arya (IIIT Delhi)	Higher Order Mixed Finite Element Discretizations of Maxwell's Equations

## Numerical Analysis

(Venue: Academic Complex - Core 5)

<b>DAY-2 (December 23, 2023): Contributory Talks</b>				
Numerical Analysis Chair: Jogen Dutta	5103	3:45-4:05	Niranjan Bora (Dibrugarh University)	On Polynomial Two Parameter Eigenvalue Problem
Numerical Analysis  Chair: Arbaz Khan	5103	4:25-5:45	Raghunath Bandha (IIT Guwahati)	A new Space Transformed Finite Element Method (ST-FEM) for elliptical interface problems in $\mathbb{R}^n$ with spherical interfaces
			Sachin Kumar (IIT Guwahati)	Nonsymmetric Interior Penalty Galerkin Method for Black-Scholes PDE Modelling European Options
			Gopinath Sadhu (IIT Guwahati)	A Multiphase Model on Asymmetric Growth of an Avascular Tumour
			Rupchand Sutradhar (IIT Guwahati)	Intracellular Dynamics of Hepatitis B Virus Infection: A Mathematical Model and Global Sensitivity Analysis of its Parameters

<b>DAY-3 (December 24, 2023): Contributory Talks</b>				
Subject	Venue	Time	Speaker	Title of the talk
Numerical Analysis Chair: G M M Reddy	5103	3:45-4:05	Sandip Maji (IIT Guwahati)	NIPG Method for Nonlinear Time-Fractional Integro-Partial Differential Equations
Numerical Analysis  Chair: Satyajit Pramanik	5103	4:25-5:25	Saurabh Bansal (IIT Guwahati)	A Fourth-Order Accurate Numerical Method for Black-Scholes PDEs Arising in Option Pricing
			Aniruddha Seal (IIT Guwahati)	An Efficient Computational Technique for Semilinear Time Fractional Diffusion Equation
			Jaya Agnihotri (IIT Delhi)	Divergence Free Entropy Stable Schemes for Two-Fluid Relativistic Plasma Flow Equations

**\*Each contributory talk is of 18 minutes duration including discussions**